32187

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

Subject: RCRA Statement of Basis
Dixon-Wearever, Inc.
Deerlake, Pennsylvania

From: John A. Armstead, Acting
Associate Division Director
Office of RCRA Program (3HW03)

To: Thomas C. Voltaggio, Director
Hazardous Waste Management Division (3HW00)

Recommended Action:

Sign the attached RCRA Statement of Basis (SB).

Purpose of Statement of Basis:

This Statement of Basis provides EPA's justification for the Agency's preliminary selection of the corrective measure alternative for the Dixon Wearever, Inc. ("Dixon") Deerlake, Pennsylvania facility. The SB briefly summarizes the results of the RCRA Facility Investigation ("RFI") and Corrective Measures Study (CMS) prepared by Dixon discussing each corrective measure alternative presented in the CMS, and provides EPA's rationale for its preliminary selection.

A workgroup consisting of the RCRA Project Manager (Cheryl Atkinson), a RCRA hydrogeologist (Thomas Buntin), RCRA Section Chief (Chris Pilla), and a Superfund Project Manager (Humane Zia), reviewed and commented on Dixon-Wearever's draft CMS which consisted of a variety of proposed corrective measure alternatives (CMAs). The workgroup utilized the following decision criteria (delineated in Headquarters draft SB guidance document) to evaluate each of the proposed CMAs: long-term reliability and effectiveness; reduction of toxicity, mobility, or volume of wastes; short-term effectiveness; implementability; and cost. The workgroup's preferred corrective measure alternative, which is the existing air stripper without addition of a vapor carbon absorption system, is presently in operation at the Facility.

Dixon will be required to continue operating the stripping tower with an enhancement to the pumping system. This pump and treat technology has been successful in removing volatile organic contamination from the groundwater to below EPA drink water standards. The present pump and treat system uses one on-site production well as a pumping well to recover the contaminated

groundwater. The enhancement requires an additional pumping well at the property boundary to provide better hydraulic control over the contaminant plume. EPA and PADER will not require treatment of the stripping tower emissions because the emission rate of 0.04 pounds per day of VOCs is in compliance with EPA and PADER standards for air emission controls for stripping tower. Also the total cancer risk from the existing on-site air stripper to the nearest receptor, located 200 feet from the source, is less than 6.69×10^{-8}.

Future Actions:

Upon signature by the Division Director, the SB and all other relevant or supporting documents (i.e. the RFI and the CMS) will be made available to the public for comment. This public comment will last thirty (30) days. A public meeting was held on August 10, 1992 which was attended by approximately 15 concerned citizens. After the public comment period, EPA will, depending on the nature of substantive public comment, either select another corrective measure alternative or prepare a Response to Comments addressing substantive public comment on EPA's preferred corrective measure alternative. EPA will then prepare a RCRA Record of Decision (ROD) for the final corrective measure alternative and make both the RCRA ROD and the Response to Comments available to the public. Following this, EPA and Dixon will begin negotiation of a RCRA § 3008(h) consent order requiring implementation of the final corrective measure alternative.

Significance of this Statement of Basis;

The Statement of basis sets out a straight forward remedy for the Facility which is ranked high by the National Corrective Action Prioritization System ("NCAPS"). The high ranking was based on, among other factors, the potential for contaminated groundwater to reach off-site and on-site receptors.

Pursuant to the 1988 RCRA 3008(h) Consent Order, the known areas of soil contamination have been stabilized under the Interim Measure provision of the Consent Order. Also, under the Interim Measure provision, the pump and treat system was installed and is presently operating; therefore, the contaminated groundwater was stabilized and remediated to EPA drinking water standards prior to issuing this Statement of Bases. This statement of basis establish the media clean up standards and point of compliance.

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CONCURRENCES

SYMBOL ▸	3HW64	3HW64	3HW60	3HW03				
SURNAME ▸	Arkinson	Pilla	Greaves	Armstead				
DATE ▸	8/12/92	8-17-92		8/14/92				

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September 18, 1992

HAND DELIVER

Cheryl Atkinson
U. S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107
Attention: 3HW64

RE: Public Comment: Dixon-Wearever Inc. Facility

Dear Ms. Atkinson:

Enclosed please find the comments of Dixon with regard to the Statement of Basis issued by EPA with regard to the above-captioned site.

Should you have any questions concerning these comments, please do not hesitate to contact me or Dixon's technical consultant, John Walker.

Sincerely,

Steven J. Engelmyer

SJE/sjs
Enclosure

COMMENTS ON USEPA STATEMENT OF BASIS FOR DIXON WEAREVER SITE

The Statement of Basis (SOB) for the Dixon Wearever site, which was forwarded to Dixon by the USEPA on August, 19, 1992, has been reviewed. The major disagreement with the remedial action proposed by the USEPA in the SOB is the use of monitoring well #5 (MW-5) as an additional recovery well. Specific concerns over the use of MW-5 as a recovery well are as follows:

1) An analysis of water quality data collected from MW-5 over the past few years indicates that, much of the time, concentrations of VOC's in this well are below drinking water standards. The remainder of the time, VOC levels are not much above drinking water standards. This indicates that, much of the time, MW-5 would be cleaning up "clean" water. From this standpoint, it is not practical or efficient for use as a recovery well.

2) Pumping tests performed during the RFI indicated that MW-5 does not cause significant drawdown in other portions of the VOC plume (i.e., well 8s). Therefore, we would not expect that it would be effective in removing contaminated groundwater from these areas, nor would it be effective in preventing migration beyond property boundaries across the entire width of the plume.

3) There is no portion of the VOC plume that MW-5 can influence that the production well cannot influence to a greater extent (except, of course, the immediate vicinity of MW-5). Therefore, any recovery time that MW-5 usurps from the production well represents a reduction in recovery efficiency.

4) The groundwater recovery program outlined in the CMS was carefully designed to gradually draw contaminated groundwater back toward the source area, while maintaining a hydraulic gradient in that direction. The use of MW-5 would disrupt this gradient and draw groundwater back toward the downgradient property boundary.

5) Water quality within this well is poor. While a complete range of chemical testing for drinking water parameters has not been completed, tests for a fairly extensive list were completed in 1986 and repeated in 1987. In addition to VOC testing, testing was completed for total dissolved solids, turbidity, nitrates, chlorides, fluoride, sulfates, phenols, arsenic, barium, cadmium, chromium, iron, lead, manganese, mercury, selenium, silver, sodium, pH, conductivity, total organic carbon, total organic halogens, radioactivity, THM, and coliform.

The testing then and since revealed that EPA drinking water standards for VOC, iron, and manganese exceed drinking water standards. See attached tabulation entitled "Well 5 - Dixon-Wearever Chemical Testing Results".

6) Piping and treating water from this well in the existing stripping tower would remove the minimal VOC contaminants present. However, note that contaminants iron and manganese greatly exceed drinking water standards with levels reaching 100 ppm. Whether or not iron can be allowed in the drinking water, treatment for VOC in a stripping tower with iron at these levels will create media clogging problems.

7) DER's Wilkes-Barre office advised that with the concentration of iron and manganese present in Well 5, this water would not be allowed in the finished water system without treatment for removal of iron and manganese even though iron and manganese are secondary standards. (A PaDER secondary standard is a non-health related standard and it is supposed to be met if possible. Each reviewing regulatory agency decides how strictly to enforce the secondary standard.)

   Per Pa. Code Title 25, Chapter 16, iron is not normally a monitored chemical because of fish or aquatic life criteria. However, allowable total iron in the stream is limited to 1.5 mg/l per Chapter 93. Depending upon stream flow, groundwater may require treatment to remove iron prior to discharge into the stormwater system.

8) Unless iron is to be removed and the treatment method approved, DER will not allow an unpermitted source to be cross-connected with the permitted water supply; therefore, the existing treatment system could not be used as a treatment unit even if Well 5 water was discharged directly to waste.

The production well has so far been effective in inhibiting the downgradient migration of VOC in the normal course of operations, and will be more effective when pumped specifically for that purpose. The implications of adding MW-5 to the recovery scheme are not well known. However, as outlined above, there stands a greater chance that it will be more detrimental than beneficial to the entire groundwater remediation effort.

WELL 5 - DIXON-WEAREVER
CHEMICAL RESULTS

		3/30/90	6/11/90	9/11/90	12/4/90	2/6/91	4/30/91	8/6/91	3/5/92	5/29/92	8/19/92	Cleanup Standard
Specific Conductance	UO	180	120	117	122	121	118	130	55	123		
pH	SU	6.4	8.2	7.4	7.1	7.1	7.3	7.2	7.1	6		
Total Organic Carbon	ppm	1.8	0.5	0.6	0.6	0.3	0.3	0.6	0.5	0.4		
Total Dissoved Solids	ppm	90	81	82	71	80	72	70	64	65		
Chloride	ppm	1.9	14			7		5		6		
Phenols	ppm	0.003	0.18			0.007		0.011		<0.005		
Total Organic Halogens	ppm	16	33	45	15	49	41	16	<5	32	9	
Total Iron	ppm	100	2.9			2.8		50.7		4	37	
Total Manganese	ppm	0.3	0.01			0.02		0.13		0.01	0.103	
Sodium	ppm	4.6	4.2			3.2		3.6		2.4		
1,1-DCA	ppb	1.91	1	1.1	2.1	3.1	2.2	2.2	1.9	2.7		610
1,1,1-TCA (1,1-DCE)	ppb	27	64.1	71.6	16.9	70.2	72.6	49.1	3.5	51.6	11.1	200
1,2-Dichloroethane	ppb	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.65	<0.5	10.9	1.5	7
TCE	ppb	2.6	10.6	7.6	2.7	9.3	10.8	5.3	0.9	10.4	0.95	5
Vinyl Chloride	ppb	<1	<1	<1	<1	<1	<1	<1	<1	<1		

STATEMENT OF BASIS FOR PROPOSED CORRECTIVE MEASURES UNDER RCRA SECTION 3008(h)

DIXON WEAREVER INCORPORATED
DEERLAKE, PENNSYLVANIA

I. Introduction

This Statement of Basis for the Dixon Wearever Inc. ("Dixon") facility, located in Deerlake, Pennsylvania ("Facility") explains the proposed corrective measure alternatives for remediating contaminated groundwater and soil at the Facility. This document summarizes the applicable corrective measure alternatives that the United States Environmental Protection Agency ("EPA") and Dixon have evaluated under an Administrative Consent Order ("Order"), entered into by EPA and Dixon on August 29, 1988, Docket Number RCRA-III-011-CA, pursuant to Section 3008(h) of the Resources Conservation and Recovery Act ("RCRA"), 42 U.S.C. Section 6928 (h). Dixon completed the RCRA Facility Investigation ("RFI"), and Corrective Measure Study ("CMS") requirements of the Order in 1992. The purpose of the RFI was to evaluate the nature and extent of releases of hazardous waste and hazardous waste constituents, and to gather data necessary to support a CMS. The purpose of the CMS was to evaluate a variety of corrective measure alternatives to address contamination at the Facility.

This document describes the corrective measure alternatives and presents EPA's preferred corrective measure alternative and justification for the selection of the alternative. This document also summarizes information that can be found in greater detail in the RFI and CMS reports and other documents contained in the administrative record for this Facility. EPA encourages the public to review the documents in order to gain a more comprehensive understanding of the RCRA activities that have been conducted at the Facility.

EPA is issuing this Statement of Basis as part of its public participation responsibilities under RCRA. EPA will select a final remedy for the Facility only after a public comment period and information submitted during this time has been reviewed and considered.

EPA may modify the proposed remedy or select another remedy based on new information or public comments. Therefore, the public is encouraged to review and comment on all alternatives described in this document and/or on any additional options not previously identified and/or studied. The public may participate in the remedy selection process by reviewing the documents contained in the administrative record file and attending the public meeting scheduled for Monday, August 10, 1992.

II. Proposed Remedy

EPA is proposing the following corrective measure alternatives to address the contaminated media at the Dixon Facility:

- Pump contaminated groundwater and treat with air stripping

A more detailed discussion of the proposed remedy is included below.

III. Facility Background

The Facility is located on Route 61 in West Brunswick Township, Schuylkill County, Pennsylvania (see figure 1). Dixon's operations at this Facility include the manufacturing and assembling of writing instruments, such as pencils, ball-point pens, felt-tip markers, and fountain pens. The Facility was previously owned and operated by David Kahn Incorporated from 1964 to 1984. Dixon, the present owner, purchased the facility in 1984 and has continued to operate the Facility since that time.

In 1985, pursuant to the Pennsylvania's hazardous waste management regulations, Dixon closed two concrete lined evaporation lagoons. According to a closure plan approved by Pennsylvania Department of Environmental Resources ("PADER"), all waste water and sludge stored in the lagoons was removed and transported to an off-site facility for proper disposal. The lagoons were then backfilled with clean fill and covered with an impermeable liner, covered with soil, graded and seeded. The two lagoons had been used to treat and store ink and metal sludge generated during the Facility's manufacturing process. The first lagoon was constructed in 1967. The second lagoon was constructed in 1980 to contain overflow from the first lagoon.

Also, in 1985 as part of the PADER approved lagoon closure plan and in order to fulfill groundwater monitoring requirements, Dixon installed, sampled and analyzed five groundwater monitoring wells, one upgradient and 4 downgradient of the area surrounding the two lagoons (see figure 2). Also the production well was sampled as part the PADER monitoring requirements. Dixon continues to sample and analyze the groundwater on a quarterly basis. The 1985 analyses of the groundwater samples detected 1,1 dichloroethane (1,1 DCA), 1,2 dichloroethylene (1,1 DCE), 1,1,1 trichloroethane (1,1,1 TCA), trichloroethylene (TCE)[1], and lead in the monitoring wells and production well.

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[1] These chemical compounds are part of a chemical group called volatile organic compounds ("VOCs").

In 1988 EPA prepared a RCRA Facility Assessment ("RFA") at the Facility. The RFA assessed the possible sources of contamination of the above mentioned lagoons and other areas of concern at the Facility. Listed below is a summary of the areas of concern described in the RFA (refer to Figure 3 for the locations of these areas):

1) A wastewater effluent lagoon used to treat effluent from an on-site sewage treatment plant and effluent from the metal plating operation located in the ink waste storage building (see Figure 3). The sewage treatment plant wastewater was last received by the lagoon in 1986, and water from the metal plating operation was last received in 1981.

2) A gravity sand oil trap (Area 15 on Figure 3) previously used to process oil generated from scrap metal processing at the Facility. This unit ceased processing oil in 1986. Boiler and cooling blow down water at the Facility are still passed through the trap prior to release through a permitted Clean Water Act National Pollutant Discharge Elimination System ("NPDES") outfall to Pine Creek.

3) A drum storage area (Area 13 on Figure 3) used to store empty alcohol and lacquer drums.

4) Three discrete on-site areas of manufacturing waste (Area 1,4, and 7 on Figure 3) used to dispose of burned and unused pen parts.

5) An inactive 20,000 gallon underground fuel oil storage tank (Area 12 on Figure 3).

The releases of contamination related to the above waste areas will be discussed further in Section IV, "Stabilization Activities".

IV. Stabilization Activities

Pursuant to the 1988 Consent Order and in order to stabilize the areas of known contamination, Dixon implemented the following interim measures under EPA's approval:

In February 1988, EPA and PADER required Dixon to stop using groundwater from the production well as a source for the Facility's drinking water. Dixon provided bottled water until a groundwater treatment system could be installed. By August 1990, Dixon had installed a stripping tower at the production well. Once the stripping tower effluent was within acceptable drinking water standards, bottled water was discontinued.

In December 1988, Dixon implemented the requirements listed in the closure plan for the wastewater effluent lagoon (see figure 3) by removing all contaminated sludge and installing groundwater monitoring wells. Final implementation of the closure plan, which includes backfilling of the excavated area, is pending PADER approval. Final implementation of the closure plan will be implementated as a requirement of the 1988 Order.

In March of 1989 the underground fuel oil storage tank (Area 12) was tested and failed a leak detection test. The tank was tested by Dixon under an EPA-approved plan submitted as part of the 1988 Order. The tank was emptied, cleaned, and removed in accordance with the EPA-approved closure plan. The oil-contaminated soil was excavated to 100 parts per million ("ppm") total petroleum hydrocarbons. The excavated oil-contaminated soil was staged and covered with plastic and is currently being stored on-site pending corrective action. Dixon has verbally proposed bioremediation as a corrective measure for this contaminated soil. Dixon will implement this corrective measure pursuant to the 1988 Order and EPA's approval.

Areas 1, 4, and 7 (see Figure 3) were contaminated with trichlorethylene, ethylbenzene, xylene, trichloroethylene and heavy metals, specifically, arsenic, barium, cadmium, chromium, lead, mercury, and silver, as the result of dumping burned pen parts and ash in these areas. In April 1991 approximately 113 tons of contaminated soil was excavated and removed to an off-site disposal Facility according to an EPA-approved removal plan.

Confirmation sampling reveals that there is still one portion of Area 7 and Area 1 where the levels of arsenic in the soil is still of concern because the arsenic level is above background and above EPA action level for arsenic in soil. Area 7 contains approximately 12.25 cubic yards of arsenic contaminated soil and Area 1 contains approximately 0.5 cubic yards of arsenic contaminated soil. Presented below is a table which shows the levels of arsenic present in Area 1 and Area 7 compared to EPA's action levels and background concentrations for arsenic in soil. (All concentration values are in ppm)

TABLE 1

Contaminant Concentration		EPA Action Level	Background Concentration
Area 1	Area 7		
15	37	1.6	5.54 - 15.0

Due to the limited amount of contaminated soil, excavation, removal, and off-site-disposal in accordance with RCRA regulations is considered to be the most efficient, rapid and cost effective corrective measure to address this soil contamination. Also, this method would provide immediate remediation with minimal generation of waste. Areas 1 and Area 7 will be excavated to below the Facility background concentration for arsenic by Dixon pursuant to the requirements of the 1988 Consent Order.

The above described stabilization measures at Areas 1,4,7, and 12 eliminated or will eliminate these sources of contamination to soil and potential sources of contamination to groundwater. These contaminated soil areas will not be considered further during this Statement of Basis.

Based on the soil samples taken during the RFI, EPA has determined that no corrective measures are necessary at the drum storage area (Area 13) and the sand oil trap area (area 15).

V. Summary of RFI

As part of the RFI Dixon installed additional monitoring wells at the Facility. These wells are labeled monitoring wells 8D, 8I, 8S, 9S, and 10S on Figure 2.

Based on hydraulic testing in the aquifer beneath the Facility there appears to be wide lateral variability in permeability across the Facility. Beneath the Facility there are three zones of permeability: (1) a shallow unconfined zone extending to a depth of approximately 100 feet below the ground surface; (2) underlying the shallow zone, a lower-permeability intermediate zone from approximately 100-150 feet below the ground surface; and (3) a deeper zone encountered from 150-400 feet, the depth of the production well.[2] The production well is reported to be 400 feet deep but is only cased to 43 feet.

The deeper aquifer yields substantial amounts of water and is used as a on-site drinking and production water supply source through the production well at the Facility. The production well intercepts all three zones. The general direction of the groundwater flow beneath the Facility is east.

Based on the findings of the RFI, the groundwater contaminants of concern are 1,1-DCA, 1,1 DCE, 1,1,1-TCA and TCE. The shallower portions of the water bearing zones are more

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[2] The depths of the water bearing zones are approximated based on the production well and the #8 cluster monitoring wells studies.

contaminated with lesser concentrations found at greater depths. Listed below in a Table 2 is a summary of the groundwater from the June 1990 sampling event (all concentration values are in ppm):

TABLE 2

WELL	COMPOUND	CONCENTRATION
1S	1,1-DCA	2.81
	TCE	1.72
2S	1,1-DCA	4.39
	1,1,1-TCA	2.36
	TCE	4.12
3S	1,1-DCA	3.1
	1,1,1-TCA	42.80
	1,1-DCE	3.16
	TCE	22.30
3D	1,1-DCE	4.28
	1,1,1-TCA	49.40
	1,1-DCE	1.62
4S	None detected	
5S	1,1,1-TCA	18.30
	1,1-DCE	0.72
	TCE	2.62
8S	1,1,1-TCA	57.30
	1,1-DCE	2.16
	TCE	24.30
8I	None detected	
8D	None detected	
9S	None detected	
10S	1,1,1-TCA	2.82

The two closed evaporations lagoons discussed above have been determined to be the only sources of groundwater contamination. However, as previously stated, these lagoons have been closed according to a PADER approved closure plan. The contaminated sludges have been removed and the area was backfilled and capped to eliminate the potential for any more

contamination to leach into the groundwater. The sludge removal and capping of these lagoons stopped any further leaching of the contamination. However, since contaminants from these lagoons leached into the groundwater prior to such measures, this groundwater contamination is addressed further in this Statement of Basis.

On January 10, 1990, in order to determine the extent of groundwater contamination, Dixon tested 29 off-site downgradient residential wells. Contamination was detected in three wells at levels below EPA drinking water standards as set forth in the 40 C.F.R. Part 141, Subpart B. The VOCs detected were tetrachloroethylene ("PCE"), 1,1,1 TCA, TCE, ethylbenzene, xylene, benzene, toluene. Benzene, toluene, ethylbenzene, and xylene have not been detected in the on-site groundwater monitoring wells and do not appear to be attributable to the Dixon Facility.. Also, PCE was not detected in the on-site monitoring wells; however, it is a potential degradation product of the TCE detected in the groundwater at the Facility. Approximately 26 homes have private wells within 1000 feet of the Facility. The remainder of Deerlake residents are serviced by a public water system. See Figure 4 for location of public water supply wells.

VI. Summary of Facility Risks

During the RFI, an analysis was conducted to estimate the human health and environmental impacts that could result if the contamination in the groundwater at the Dixon Facility were not remediated. This analysis is commonly referred to as a baseline risk assessment. In conducting this assessment, Dixon used a hypothetical exposure scenario based on ingestion of contaminated groundwater by a worker at the Facility. This scenario is worst case because the most highly contaminated groundwater is located on-site. No one is currently exposed to the groundwater contamination beneath the Facility because the production well water is presently being treated to remove the contamination.

Historical data from the four most contaminated wells at the Facility, Wells 3S, 5S, 8S, and the production well, was used to conduct the baseline risk assessment. The average concentrations of the contaminants of concern in these wells are 24 part per billion ("ppb") TCE, 46 ppb 1,1,1-TCA, 5 ppb 1,2-DCE, 10 ppb 1,1-DCE, and 18 ppb 1,1-DCA.

Lead was detected in the on-site groundwater monitoring wells during the 1984 quarterly groundwater sampling. Subsequent analysis of samples did not indicate the presence of lead.

The toxicity of chemical constituents detected in the groundwater was evaluated for carcinogenic and non-carcinogenic

effects on human health. To assess the non-carcinogenic effect, a Hazard Index approach is used. This approach assumes that there is a level of exposure below which it is unlikely for even sensitive populations to experience adverse health effects. If the exposure level exceeds this threshold there may be concern for potential non-cancer effects. As a general rule, the greater the value above one (1) on the Hazard Index the greater the level of concern. For carcinogens, a lifetime cancer risk is calculated.

The assessment evaluated a worst case scenario of industrial use where the stripping tower, currently treating all water used at the Facility, fails and is not repaired, thereby potentially exposing employees to contaminated groundwater. For the exposure scenario of Facility workers drinking untreated groundwater the above assessment indicates that there is no risk of non-carcinogen effects because the hazard quotient is 0.0769. This is below 1.0 which would be the value at which there would be a concern for potential health effects.

The potential exposure to carcinogens would present a life time cancer risk of 2×10^{-4}. This means that if Dixon ceased pumping the contaminated groundwater and no other cleanup action were taken by EPA, approximately 2 additional persons per 10,000 would have a chance of developing cancer as a result of exposure to contaminated groundwater at the Facility. This estimate was developed by taking into account various conservative exposure assumptions. Specifically the assumptions are for a 70 kg (154 pounds) person, drinking 2 liters of the contaminated water per day, 365 days a year for 70 years.

To assess the risk of the emissions of the VOCs from the air stripper to the nearest residents, atmospheric dispersion modeling was performed. The total cancer risk from the existing on-site air stripper to the nearest receptor located 200 feet from the source is less than 6.69×10^{-8}. This means that approximately 7 people in 100,000,000 have an increased probability of developing cancer in a lifetime as a result of the exposure to the VOCs discharged from the stripping tower.

Actual or threatened releases of hazardous constituents from this Facility, if not addressed by the proposed remedy or one of the other remedies considered, may present a current or potential threat to human health.

VII. Scope of Corrective Action

The history and distribution of contamination at the Dixon Facility is straightforward. All contaminated areas have been characterized and the lateral and vertical distribution of the contaminants emanating from these contaminated areas, if any, is

known. The groundwater VOC plume has migrated off-site at levels below the levels EPA considers safe for human consumption. However, in the event that the stripping tower presently operating at the Facility ceases operation, the groundwater would be a potential threat at this Facility because of the potential for direct ingestion of contaminants though drinking water wells. The scope of this proposed corrective action is restricted to hydraulic control, recovery, and treatment of groundwater and associated groundwater monitoring activities.

VIII. Summary of Alternatives

In the CMS Report, Dixon evaluated the following four corrective measure alternatives to prevent further migration of the contaminants by maintaining hydraulic control over the contaminant plume and to remove the contamination from the groundwater to EPA drinking water standards.

Alternative 1: Existing Air Stripping With the Addition of a Vapor Carbon Absorption System.

Under this alternative, Dixon would continue pumping the groundwater from the production well which is located downgradient from the VOC contamination source area (i.e., the two closed evaporation lagoons). This pumping would further contain and prevent the migration of the contaminated groundwater plume from the source area. The pumped water would be treated by air stripping. An air blower pumps air into the bottom of the air stripper and the air flows upwards and countercurrent to the water flow, consequently removing the VOCs from the groundwater. Air stripping transfers VOCs from the liquid phase to the vapor phase. The treated water flows into a sump located at the bottom of the air stripper. The treated water would be stored in an on-site 400,000 gallon storage tank until needed by the Facility. Treated water in excess of that needed by the Facility would be discharged from the water storage tank to an overflow pipe and discharged into the Facility's storm water system. An NPDES permit would be required for the discharged water. Presently Dixon has the required "Public Water Supply Permit" issued by PADER to operate a stripping tower.

The contaminated air discharged from the air stripper would be treated with activated carbon before being released to the atmosphere. The activated carbon is a filtering media which traps complex organic molecules by physical or chemical forces. Once the carbon is saturated with organics, the spent carbon must be removed and either replaced with virgin carbon or regenerated. The spent carbon would be sent to an off-site hazardous waste disposal facility.

Alternative 2: Existing Air Stripping Without Addition of a Vapor Carbon Absorption System.

This alternative incorporates the same pump and treat scenario described above but without the activated carbon unit to collect the VOC vapors. Eventually the vapor phase organics would break down under natural conditions (photo degradation in the presence of ultra-violet light). As in Alternative 1 the treated water would be transferred into a storage tank for on-site use and excess water would be discharged into the storm water system in accordance with an NPDES permit.

Alternative 3: Replacement of the Existing Air Stripper with the Addition of a Vapor Carbon Absorption System.

This alternative is the same pump and treat scenario summarized in Alternative 1. Therefore, the effectiveness for groundwater remediation would be the same as Alternative 1. However, to reduce the rate at which air is released into the atmosphere Dixon has proposed replacing the existing grid spaced air stripper with a new random packed air stripper. The difference in the stripping towers is the packing material. The random packed stripping tower would reduce the rate that air is discharged to the vapor carbon unit and therefore require a smaller vapor carbon unit than that proposed in Alternative 1. A smaller vapor carbon unit would require a smaller amount of contaminated carbon disposal. The total volatile organic to be handled would not change.

Alternative 4: Liquid Phase Activated Carbon Unit.

This alternative replaces the stripping tower summarized in Alternative 1 above with a carbon unit. The carbon absorption process involves pumping the recovered contaminated groundwater and treating with activated carbon. The organic molecules contacting the activated carbon particles would be held there by physical or chemical forces. Once the carbon is saturated with the organics the spent carbon must be removed. The spent carbon would be disposed at an off-site facility. The treated water would be handled in the same manner described in Alternative 1. A PADER Public Water Supply permit to operate a carbon filtration unit would be required.

IX. Evaluation of the Proposed Remedy and Alternatives

This section profiles the performance of the proposed corrective measure alternatives against the four general standards for corrective measure (overall protection, attainment of media cleanup standards, sources control, and compliance with waste management standards) and the five remedial decision

factors (long term reliability, reduction in toxicity, mobility or volume of waste, short term effectiveness, implementability, and cost

To each of the alternatives described in Section VIII, above, EPA has added a feature designed to enhance the recovery well system. The implementation of an additional groundwater pumping well would be required as an addition to all four of the proposed alternatives. The present recovery system uses only one pumping well, the production well, to recover the contaminated groundwater. The enhancement requires an additional pumping well. Monitoring well #5; located near the down-gradient property boundary, will be the additional pumping well. Also, the pumping of the production well will be staggered with the pumping of well #5. This enhancement to the present pump and treat system will provide better hydraulic control over the contaminant plume because a larger capture zone will be created. The staggered pumping will act as a "flushing" system to remove the VOC contamination from the aquifer.

A. Overall Protection

All the alternatives would provide adequate protection of human health and the environment by reducing or controlling the risk of exposure to VOCs through groundwater pumping and treatment. Also, the implementation of the additional groundwater pumping well, as described above, will further protect human health and the environment by reducing the possibility of further off-site contaminant migration and expeditiously removing all contaminants from the on-site groundwater. Although Alternatives 1 and 3 provide for VOC air emission capture through a vapor phase carbon absorption unit and Alternative 4 through a liquid phase carbon absorption unit, the operation of carbon unit requires energy, the generation of which may involve secondary pollution emissions. The carbon used in the carbon absorption system is usually regenerated by steam which in turn is produced in a boiler typically burning distillate fuel oil. These combustion processes produce additional pollutants such as sulfur dioxide and nitrogen oxides which must be taken into account in assessing the effectiveness of the VOC emission control process[3]. Although Alternative 2 does not control the emissions of VOCs into the air, the VOCs stripped from the groundwater will release approximately 0.04 pounds per day of VOCs into the air assuming an operation of 12 hour per day. This emission rate is in compliance with all applicable Federal regulations, specifically, the 0.04 pounds per day of VOCs released into the air is less than the EPA standard

[3] Air Stripper Design Manual (EPA Document No. EPA-450/1-90-003), 0.23.

for requiring control of air emissions which is 15 pounds per day, (EPA directive 9355.0-28) and the RCRA - Organic Air Emissions Standards for Process Vents which is 3 pounds per hour and 3.1 tons per year. Also, the risk of 6.69 X 10^{-8} (see Risk Assessment section) calculated based on the release of 0.04 pounds per day or 14 pounds per year of VOC is protective of human health.

B. Attainment of Media Cleanup Standards

EPA has established media cleanup standards and points of compliance for the groundwater at the Dixon Facility. For the Dixon Facility, media cleanup standards have been established that are either the Maximum Contaminant Levels ("MCLs") for the contaminant in issue or the concentration of a given contaminant which corresponds to the 10^{-6} risk level. The MCLs are the maximum permissible level of a contaminant in water which is delivered to any user of public water system as defined in the 40 C.F.R. Part 141, Subpart B. The 10^{-6} risk level represents the concentration of a carcinogen such that a person of average weight drinking 2 liters of water per day containing the contaminant would have no more than a 1 in a million chance of developing cancer from drinking the water during a 70 year life time.

When establishing media cleanup standards, it is also necessary to establish points of compliance, i.e., in which groundwater monitoring wells, recovery wells and/or production wells these media cleanup standards will be measured. The on-site points of compliance will be wells designated as monitoring wells 1,2,3,5,8,9,10, and the production well. These are all on-site wells in which groundwater contamination was detected during the RFI. These locations will enable Dixon to detect the contaminant of concern prior to migration off-site. Also two private off-site wells previously tested will be designated points of compliance. The exact location of the off-site points of compliance will be determined during the implementation of the corrective measure. The following table lists the points of compliance and the respective media cleanup standards for contaminated groundwater that Dixon would be required to attain regardless of the alternative chosen. All standards are expressed in ppb.

CONTAMINATE	STANDARD	RATIONAL
1,1-DCA	610	10^{-6}
1,1-DCE	7	10^{-6}
1,1-DCE	61	MCL
PCE	6	MCL

1,1,1-TCA	200	MCL
TCE	5	MCL

The goal of the proposed corrective measure is to restore the groundwater to its beneficial use which is a drinking water aquifer. Based on information obtained during the RFI, and the evaluation of all corrective measure alternatives, EPA has concluded that all of the alternatives would be able to achieve these groundwater media cleanup standards. All alternatives would provide for the recovery and treatment of the contaminated groundwater system.

C. Controlling the Sources of Releases

All the alternatives will provide hydraulic control as well as groundwater recovery and treatment of VOCs. Enhancement of the pumping system by adding an additional pumping well would provide additional control of the off-site migration of the VOC plume.

D. Complying with Standards for Management of Waste

All alternatives would comply with all applicable waste management standards. Groundwater pumped and treated and not reused at the Facility would be discharged into the public sewer system. Therefore a NPDES permit would have to be obtained.

Alternatives 1, 3,and 4 would require the off-site disposal or on-site disposal of the spent carbon units. Disposal of the carbon units would be in compliance with all applicable laws and regulations.

Alternative 2 releases VOCs into the atmosphere. The total emission rate is 0.04 pounds/day assuming operation of 12 hours/day. This emission rate is in compliance with the: 1) National Ambient Air Quality Standards (NAAQS), 2) RCRA - Organic Air Emissions Standards for Process Vents, and 3) OSWER Directive 9355.0-28 on Air Stripper Control Guidance. Therefore, the air stripper presently in place will not need air emissions controls. Also, pursuant to 25 PA Code Section 127.14(8), PADER requires Plan Approval/ Operating Permit, that emissions be reduced to the minimum obtainable levels through the use of best available technology. Dixon has received an exception from PADER for requiring air emissions controls on the stripping tower presently in place. This exception was granted by the PADER to Dixon based on minor significance for operations which emit air toxics in amounts less than 4 tons per year.

E. Long-term Reliability and effectiveness:

The on-going pumping and treatment activity (Alternative 2) at Dixon has served to reduce groundwater contamination and contain the migration of contaminants within the aquifer system beneath the Dixon Facility. Alternatives 1 and 3 once installed would have the same long term effectiveness of removing VOC from the groundwater since they make use of the same or similar treatment method, a stripping tower. Alternative 4 is also a proven method for treating VOC waste streams; however, it requires performance monitoring to track contaminant breakthrough due to periodic saturation.

F. Reduction of Toxicity, Mobility, or Volume of Waste

All alternatives involve the extraction of the contaminated groundwater by pumping and treating, thus the toxicity, mobility and volume of waste in the groundwater will be reduced. Better hydraulic control will result from the pumping of Well #5 in addition to pumping the production well. Also, the addition of Well # 5 which is near the downgradient boundary of the Facility will serve to further contain the contamination and thereby reducing its mobility by inhibiting migration.

G. Short term Effectiveness

Alternative 2, which is the existing groundwater pump and treatment system, has already been implemented at the Dixon Facility to mitigate potential risks to human health. Dixon has already demonstrated the short term effectiveness of the contamination removal through monitoring the influent and effluent water of the striping tower system.

Alternatives 1,3, and 4 would also utilize the pump and treat system but would require a disruption in the present pumping schedule. The short term effectiveness of these alternatives would be interrupted for a period of time.

H. Implementablity:

Alternative 2 has already proved to be implementable at the Dixon Facility since the stripping tower was installed and operating by 1990.

All alternatives will require 3 to 5 months for Dixon to obtain an NPDES permit. Dixon will continue operating the existing air stripper and continue storing treated groundwater for Facility use. Excess treated groundwater, not needed by Dixon, will not be released to the stormwater system until an NPDES permit is obtained. Excess water is presently stored and reused on-site.

Alternative 1 would take 3 to 6 months to purchase and install a vapor carbon unit. Alternative 3 would take 4 to 8 months to purchase and install the new air stripping tower and carbon vapor unit and obtain or revise the Water Supply Permit. Alternative 4 would take 6 to 8 month to implement because of the need to determine optimum withdraw rate, obtain a PADER Water Supply Permit and design and install the carbon treatment unit.

I. Cost:

The following costs have been calculated for each alternative.

ALTERNATIVE	CAPITAL COST	(Present Value) OPERATION & MAINTENANCE
1	$ 79,400	$ 22,300
2	$ 3,000	$ 9,700
3	$ 49,200	$ 18,600
4	$ 181,400	$ 26,920

In summary all alternatives would provide protection of human health and the environment through pumping and treating the contaminated groundwater. Alternative 2 is preferred because the unit is already installed and operating, has proven effective in removing the contamination from the groundwater, meets all applicable air emission standards, and is cost effective.

X. Public participation

EPA is requesting comments from the public on the corrective measure alternatives and on EPA's preliminary identification of Alternative 2 as the preferred corrective measure alternative to remediate the contamination at the Dixon Facility. The public comment period will last thirty (30) calendar days from August 17 to September 16, 1990. Comments on the Corrective Measures Study and or EPA's preliminary identification of a preferred corrective measure alternative should be in writing. Written comments may be submitted to :

Cheryl Atkinson
U.S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107
ATTENTION: 3HW64
(215) 597-3217

A public meeting on this Statement of Basis was held on August 10, 1992 at the Deerlake & West Brunswick Fire Company ,Deerlake Pennsylvania.

A Copy of the Administrative Record is available for review at the following two locations:

U.S. Environmental Protection Agency
Region III (3HW64)
841 Chestnut Street Building
Philadelphia, Pennsylvania 19107
Telephone # 215-597-3217

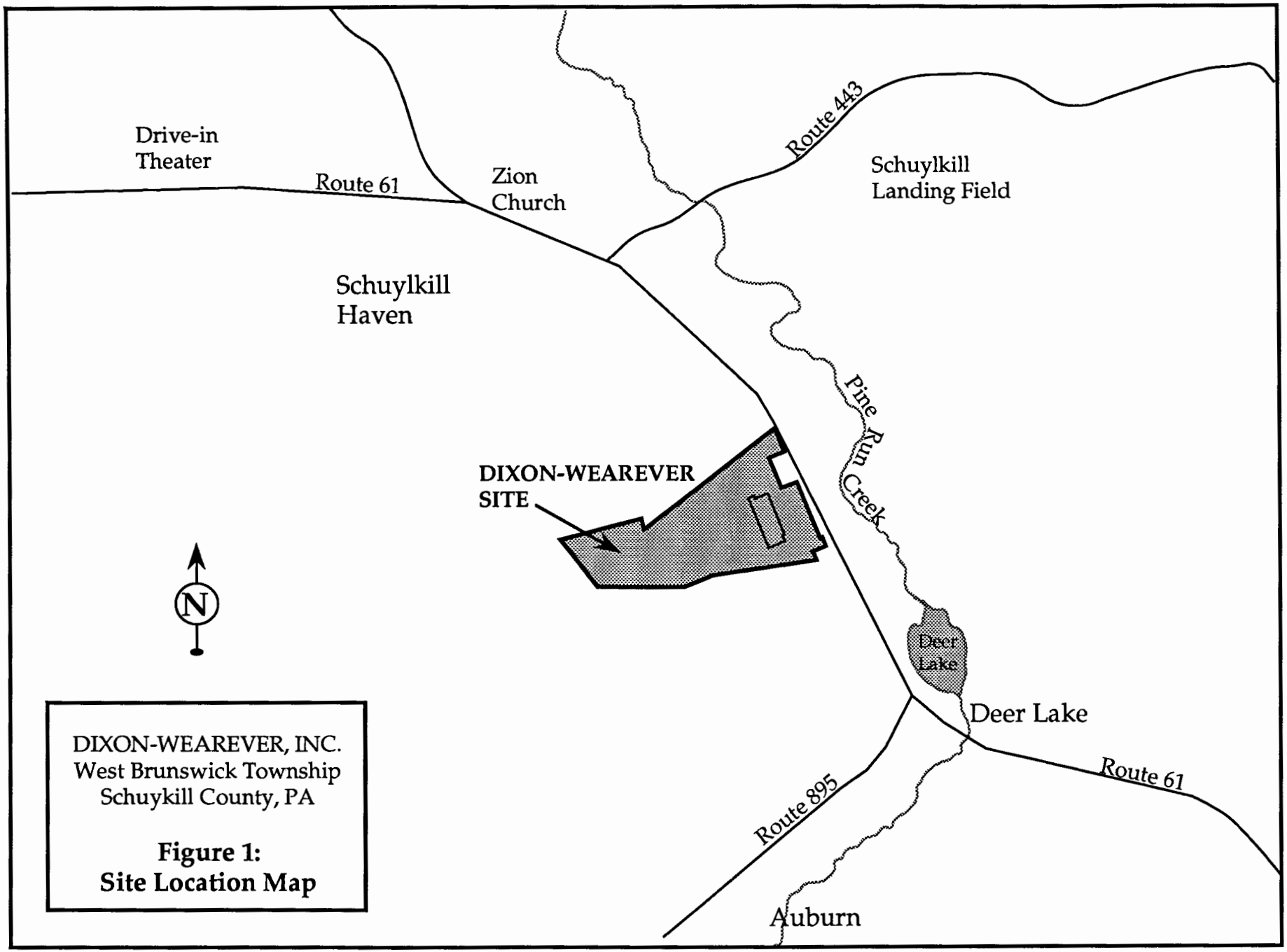
and

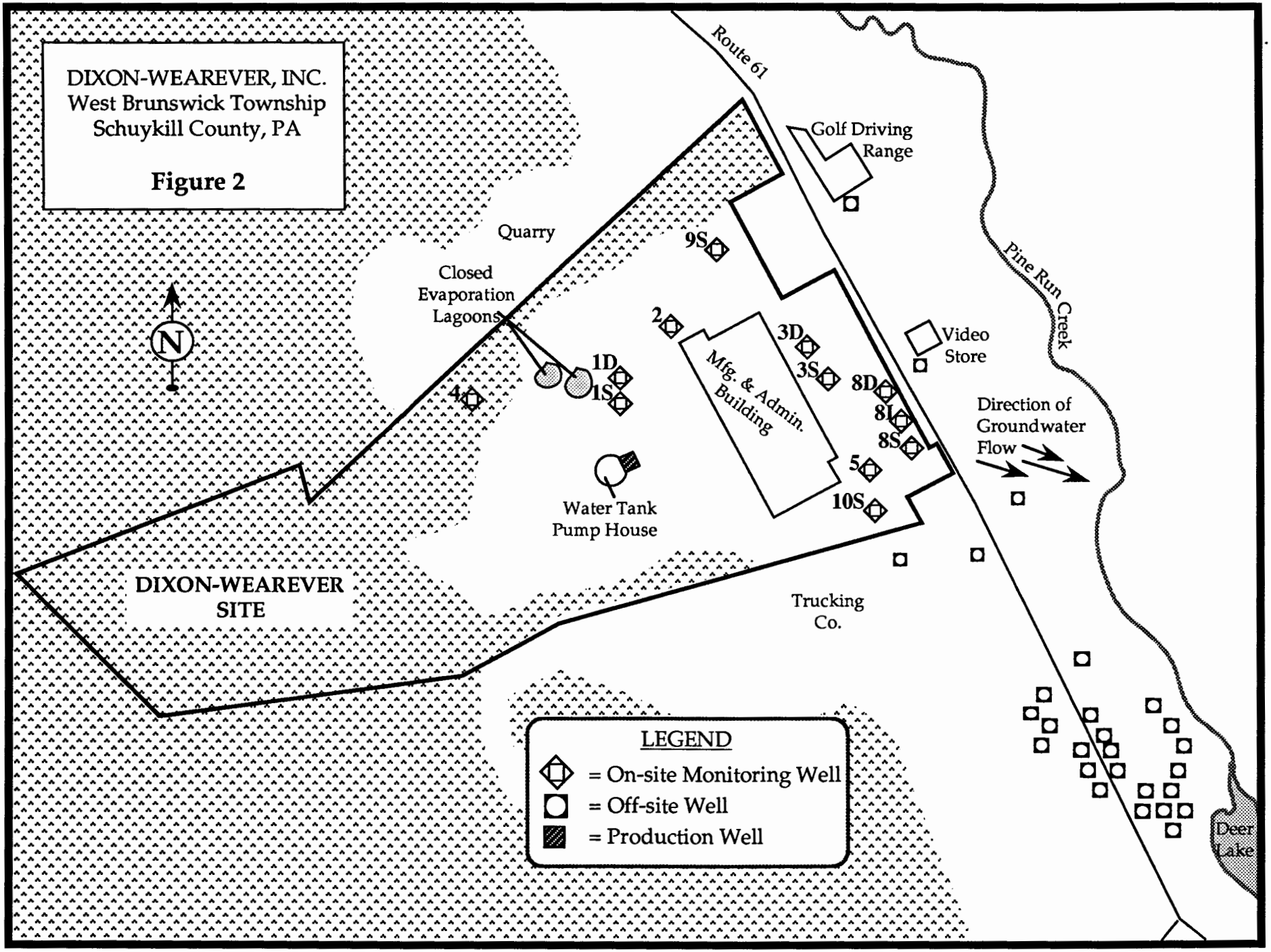
Orwigsburg Free Library
132 Center Square
Orwigsburg, Pennsylvania 17961

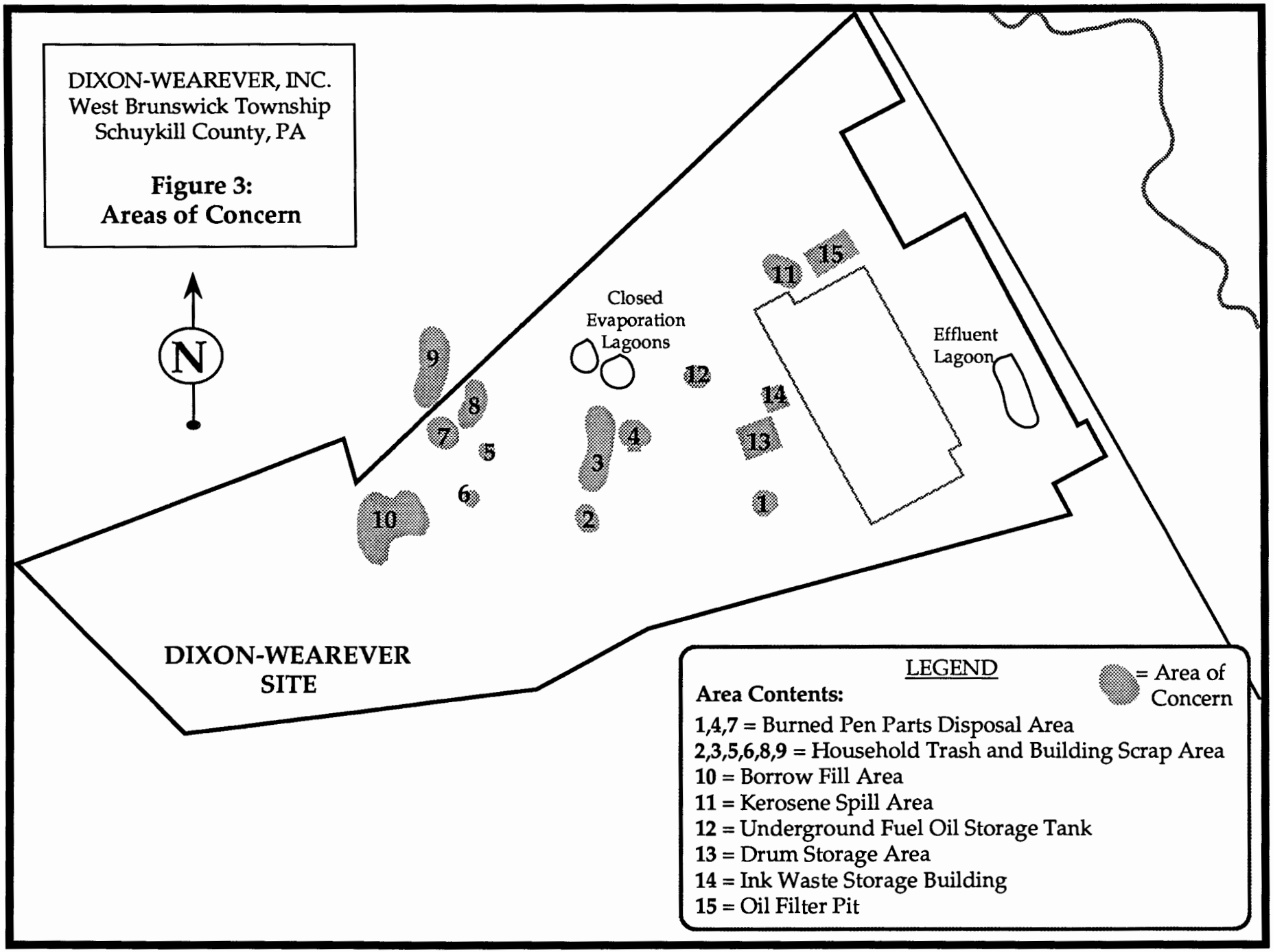
Following the thirty (30) calendar day public comment period, EPA will prepare a Final Decision and Response to Comments which identifies the selected Corrective Measures and addresses all significant written comments and any significant oral comments generated at the public meeting. This Final Decision and Response to Comments will be made available to the public. If, on the basis of such comments or other relevant information, significant changes are made in the Corrective Measures Alternative identified by EPA, EPA will seek public comments on the revised Corrective Measures Alternative.

Upon consideration of public comments, EPA will provide a final Corrective Measure Alternative for the Dixon Facility. Thereafter, EPA will seek implementation of the final Corrective Measure Alternative via available legal authorities, including RCRA Section 3008(h).

Thomas C. Voltaggio, Director
Hazardous Waste Management Division


Drive-in
Theater
Route 61
Zion
Church
Route 443
Schuylkill
Landing Field
Schuylkill
Haven
DIXON-WEAREVER
SITE
Pine Run Creek
N
Deer
Lake
Deer Lake
Route 61
Route 895
Auburn
DIXON-WEAREVER, INC.
West Brunswick Township
Schuykill County, PA
Figure 1:
Site Location Map


DIXON-WEAREVER, INC.
West Brunswick Township
Schuykill County, PA
Figure 2
Route 61
Golf Driving Range
Quarry
Closed Evaporation Lagoons
9S
2
3D
3S
8D
8I
8S
1D
1S
4
5
10S
Mfg. & Admin. Building
Video Store
Pine Run Creek
Direction of Groundwater Flow
Water Tank
Pump House
DIXON-WEAREVER SITE
Trucking Co.
Deer Lake
N
LEGEND
= On-site Monitoring Well
= Off-site Well
= Production Well


DIXON-WEAREVER, INC.
West Brunswick Township
Schuykill County, PA
Figure 3:
Areas of Concern
N
Closed
Evaporation
Lagoons
Effluent
Lagoon
9
8
7
5
6
10
4
3
2
12
14
13
1
11
15
DIXON-WEAREVER
SITE
LEGEND
= Area of
Concern
Area Contents:
1,4,7 = Burned Pen Parts Disposal Area
2,3,5,6,8,9 = Household Trash and Building Scrap Area
10 = Borrow Fill Area
11 = Kerosene Spill Area
12 = Underground Fuel Oil Storage Tank
13 = Drum Storage Area
14 = Ink Waste Storage Building
15 = Oil Filter Pit

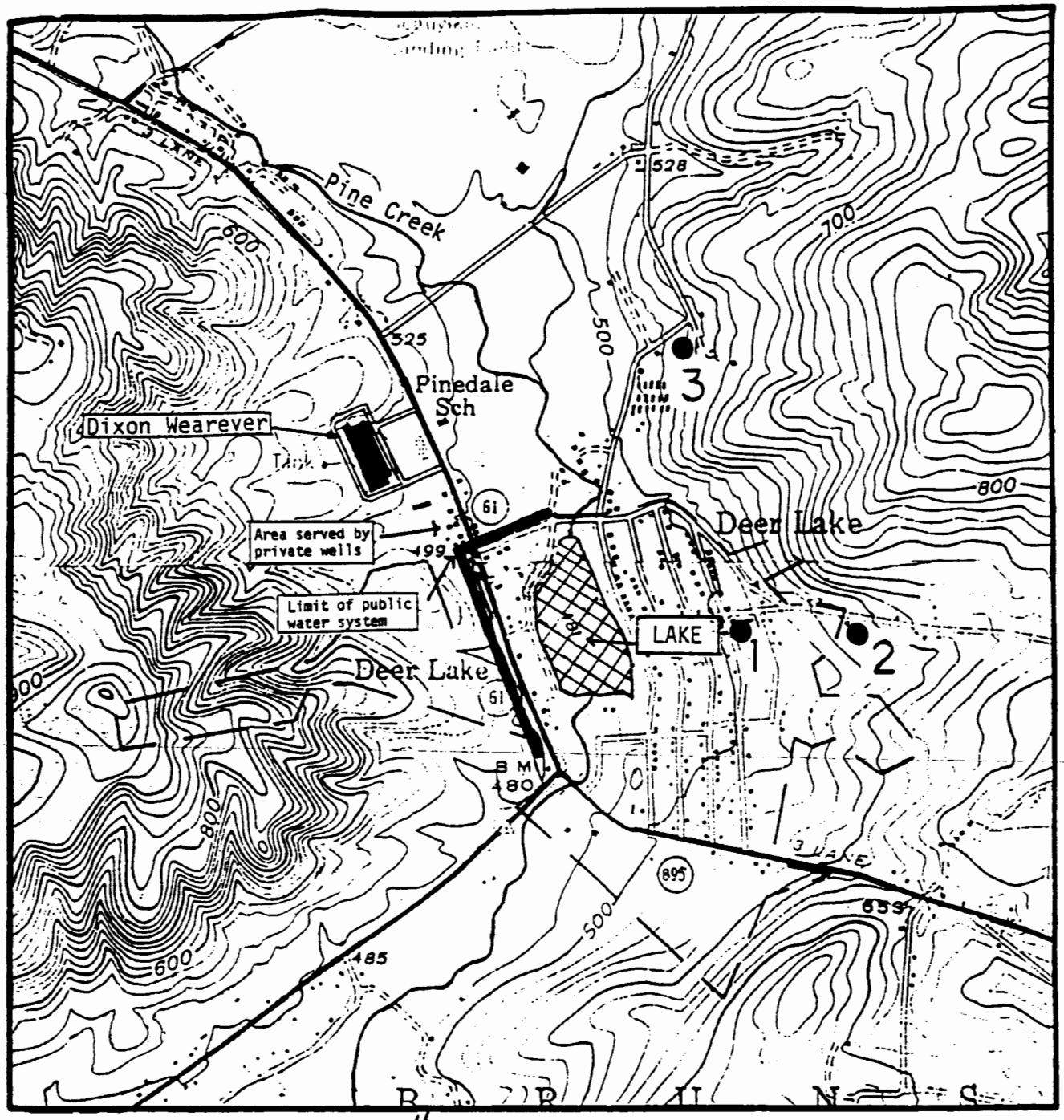


FIGURE ~~3A~~: LOCATION OF DEER LAKE WATER WELLS, SCHUYLKILL COUNTY, PA.

Portion of Orwigsburg and Auburn, PA,, 7.5' Quadrangle, U.S. Geologic Survey

N

0 2000'

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Upon consideration of public comments, EPA will provide a final Corrective Measure Alternative for the Dixon Facility. Thereafter, EPA will seek implementation of the final Corrective Measure Alternative via available legal authorities, including RCRA Section 3008(h).

for Thomas C. Voltaggio, Director 8/18/92
Hazardous Waste Management Division

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Upon consideration of public comments, EPA will provide a final Corrective Measure Alternative for the Dixon Facility. Thereafter, EPA will provide Dixon with an opportunity to negotiate a RCRA Section 3008(h) Corrective Measures Implementation Order requiring implementation of the EPA approved final Corrective Measure Alternative.

Thomas C. Voltaggio, Director
Hazardous Waste Management Division

CONCURRENCES

SYMBOL ▸	3HW64	3RC32	3RC32	3HW64	3HW60	3HW03		
SURNAME ▸	Atkinson	Mistretta	Coe 8-17	Pilla	Greaves	Armstead		
DATE ▸						8/18/93		

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